

## CLAIMS

What is claimed is:

1. A method of improving voice call routing efficiency in an IS-2000 wireless communication network where a mobile station engaged in an active packet data call is handed off from a first mobile switching center to a second mobile switching center, the method comprising:

sending a release message from the second mobile switching center to the first mobile switching center following the handoff to cause the first mobile switching center to release communication resources allocated to the mobile station, wherein said release message is sent while the packet data call is still active; and

sending a registration message from the second mobile switching center to a home location register that maintains location information for the mobile station to cause the home location register to identify the second mobile switching center as an anchor mobile switching center for the mobile station.

2. The method of claim 1, further comprising:

determining whether the mobile station is engaged in a concurrent voice call; and wherein the release message is sent responsive to the handoff if the mobile station is not engaged in a concurrent voice call.

3. The method of claim 1, wherein the mobile station is engaged in a concurrent voice call at the time of the handoff, and wherein the release message is sent following termination of the concurrent voice call if the packet data call remains active.

4. The method of claim 1, wherein sending a release message comprises sending an IS-41 DROPSERV message from the second mobile switching center to the first mobile switching center.
5. The method of claim 1, wherein sending a registration message from the second mobile switching center to the home location register comprises sending an IS-41 QUALREQ message from the second mobile switching center to the home location register.
6. The method of claim 5, further comprising sending an IS-41 REGCANC message from the home location register to the first mobile switching center, such that the first mobile switching center cancels subscriber profile information stored for the mobile station in a first visitor location register associated with the first mobile switching center.
7. The method of claim 5, further comprising:
  - receiving subscriber profile information for the mobile station from the home location register at the second mobile switching center responsive to sending the registration message; and
  - storing the subscriber profile information in a second visitor location register associated with the second mobile switching center.
8. The method of claim 1, further comprising receiving mobile-specific information from the first mobile switching center, wherein a portion of the mobile-specific information is included in the registration message.

9. The method of claim 1, further comprising obtaining mobile-specific information from the mobile station, said mobile-specific information being included in the registration message.

10. The method of claim 1, further comprising sending a Status Request message to the mobile station to obtain selected mobile-specific information necessary for reestablishing communication with the mobile station after termination of the active packet data call.

11. A mobile switching center for use in a wireless communication network, the mobile switching center comprising:

    a communication interface to connect the mobile switching center with a second mobile switching center and with a signaling network;

    a switching circuit for routing voice call data to and from a mobile station in the coverage area of the mobile switching center; and

    a system controller operatively connected to the communication interface and to the switching circuit for controlling the operation of the mobile switching center, said system controller operative to:

        send a release message via the signaling network to the second mobile switching center following a handoff of a mobile station from the second mobile switching center to the mobile switching center, said mobile station being engaged in a packet data call and said release message being sent while the packet data call is still active to cause the second mobile switching center to release communication resources allocated to the mobile station; and

send a registration message to a home location register associated with the mobile station such that the home location register updates location information stored at the home location register, said location information identifying the mobile switching center as a current anchor mobile switching center for the mobile station.

12. The mobile switching center of claim 11, wherein the mobile switching center sends the release message to the second mobile switching center responsive to the handoff if the mobile station is not engaged in a concurrent voice call at the time of the handoff.

13. The mobile switching center of claim 11, wherein the mobile switching center sends the release message to the second mobile switching center responsive to the termination of a concurrent voice call if the mobile station is engaged in a concurrent voice call at the time of the handoff.

14. The mobile switching center of claim 13, wherein the mobile switching center determines whether the handoff involves concurrent voice and data services by examining service option information included in a handoff message received from the second mobile switching center.

15. The mobile switching center of claim 11, wherein the mobile switching center receives mobile-specific information from the second mobile switching center during handoff of the mobile station, wherein a portion of the mobile-specific information is included in the registration message.

16. The mobile switching center of claim 11, wherein the mobile switching center obtains mobile-specific information from the mobile station, said mobile-specific information being included in the registration message.
17. The mobile switching center of claim 16, wherein the mobile switching center obtains mobile-specific information from the mobile station by sending a Status Request message to the mobile station.
18. A communication network providing both packet data and voice services, comprising:

a first mobile switching center having a first coverage area and connected to a public switched telephone network for routing calls between a mobile station and the public switched telephone network while the mobile station is in the first coverage area;

a second mobile switching center having a second coverage area and connected to the public switched telephone network for routing calls between the mobile station and the public switched telephone network while the mobile station is in the second coverage area;

wherein the second mobile switching center is operative to send a release message to the first mobile switching center and a registration message to a home location register, wherein the release message is sent following a handoff of a mobile station from the first mobile switching center to the second mobile switching center, said mobile station being engaged in a packet data call, and wherein the release message is sent while the packet data call is still active; and

wherein the release message is sent to cause the first mobile switching center to release communication resources allocated to the mobile station engaged in the packet data call.

19. The communication system of claim 18, wherein the second mobile switching center sends the release message to the first mobile switching center responsive to the handoff if the mobile station is not engaged in a concurrent voice call at the time of the handoff.

20. The communication system of claim 18, wherein the second mobile switching center sends the release message to the first mobile switching center responsive to the termination of a concurrent voice call if the mobile station is engaged in a concurrent voice call at the time of the handoff.

21. The communication system of claim 18, wherein the second mobile switching center receives mobile-specific information from the first mobile switching center during hand off of the mobile station, wherein a portion of the mobile-specific information is included in the registration message.

22. The mobile switching center of claim 18, wherein the second mobile switching center obtains mobile-specific information from the mobile station, said mobile-specific information being included in the registration message.

23. The mobile switching center of claim 22, wherein the second mobile switching center obtains mobile-specific information from the mobile station by sending a Status Request message to the mobile station.